

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Batra et al.	Conf. No.:	3188
Serial No.:	10/827,566	Art Unit:	2168
Filed:	04/19/2004	Examiner:	Gortayo, Dangelino N.
Title:	SYSTEM AND METHOD FOR CREATING DYNAMIC WORKFLOWS USING WEB SERVICE SIGNATURE MATCHING	Docket No.:	CHA920040004US1 (IBMC-0102)

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BRIEF OF APPELLANT

This is an appeal from the Final Office Action dated February 3, 2009 rejecting claims 1-20. This Brief is accompanied by the requisite fee set forth in 37 C.F.R. 1.17 (c).

REAL PARTY IN INTEREST

International Business Machines Corporation is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

As filed, this case included claims 1-20. Claims 1, 7, 8, 11-13, 15, 16 and

19 were previously amended. Claims 1-20 remain pending. Claims 1-20 stand rejected and form the basis of this appeal.

STATUS OF AMENDMENTS

A Final Office Action was issued by the Office dated February 3, 2009 in response to an Amendment that was filed on November 13, 2008 by Appellant.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention provides a system, program product, and method for dynamically implementing a chain of Web services from a client on the World Wide Web to execute a workflow.

Claim 1 claims a system for dynamically implementing a chain of Web services from a client on the World Wide Web to execute a workflow for analyzing microarray data [p.4 l.3-5], comprising: a database for storing a list of available Web services [p.7 l.20-21], wherein each listed Web service includes a description of a task performed by the Web service [p.7 l.15-16] and an input signature and an output signature of the Web service [p.7 l.16-17], wherein the Web service comprises a computer program accessible over the World Wide Web [p.2 l.20-21]; and a selecting system for forming the chain of Web services by selecting a Web service from the list of available Web services for each of a plurality of tasks in the workflow [p.7 l.2-4], wherein the workflow comprises a series of linked tasks and a specified input and output format [p.9 l.1-5], and wherein the selecting examines a set of available Web services configured to

execute each task [p.8 I.2] and identifies and selects at least one Web service having matching input and output signatures [p.8 I.3] ensuring that each Web service selected to complete a task is compatible with adjacent Web services in the chain of Web services [p.8 I.3-5]; and a signature matching system for identifying the set of available Web services configured to execute each task [p.8 I.1-2], wherein for each task the identifying comprises identifying all Web services in the list of available Web services having at least one of the matching input and output signatures for each task [p.8 I.3].

Claim 8 claims a program product, stored on a recordable medium for executing a workflow for analyzing microarray data by dynamically implementing Web services from a client on the World Wide Web [p.4 I.12-14], comprising: program code configured for storing a list of available Web services [p.7 I.20-21], wherein each listed Web service includes a description of a task performed by the Web service [p.7 I.15-16], and an input signature and an output signature of the Web service [p.7 I.16-17]; and program code configured for forming a chain of Web services by selecting a Web service from the list of available Web services for each of a plurality of tasks in the workflow [p.7 I.2-4], wherein the workflow comprises a series of linked tasks and a specified input and output format [p.9 I.1-5], and wherein the selecting examines a set of available Web services configured to execute each task [p.8 I.2] and identifies and selects at least one Web service having matching input and output signatures [p.8 I.3] ensuring that each Web service selected to complete a task is compatible with adjacent Web services in the chain of Web services [p.8 I.3-5]; and program code

configured for identifying the set of available Web services configured to execute each task [p.8 l.1-2], wherein for each task the identifying comprises identifying all Web services in the list of available Web services having at least one of the matching input and output signatures for each task [p.8 l.3].

Claim 16 claims a method for executing a bioinformatics workflow from a client on the World Wide Web [p.4 l.21-22], comprising: providing a workflow having a plurality of linked tasks and a specified input and output format [p.9 l.1-5]; providing a list of known bioinformatics Web services [p.7 l.20-21], wherein each listed Web service includes a description of a task performed by the Web service [p.7 l.15-16], and an input signature and an output signature of the Web service [p.7 l.16-17], further wherein the Web service comprises a computer program accessible over the World Wide Web [p.2 l.20-21]; selecting a Web service from the list of known bioinformatics Web services for each task in the bioinformatics workflow to form a chain of Web services [p.7 l.2-4], wherein the selecting step examines a set of available Web services configured to execute each task [p.8 l.2] and identifies and selects at least one Web service having matching input and output signatures [p.8 l.3] ensuring that each Web service selected to complete a task is compatible with adjacent Web services in the chain of Web services [p.8 l.3-5]; and identifying the set of available Web services configured to execute each task [p.8 l.1-3], wherein for each task the identifying comprises identifying all Web services in the list of available Web services having at least one of the matching input and output signatures for each task [p.8 l.3]; and calling each selected Web service in the chain to execute the

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-6, 8-14, 16-18, and 20 are unpatentable under 35 U.S.C. 102(b) as being anticipated by Farmer (WO 02/39486).
2. Whether claims 7, 15, and 19 are unpatentable under 35 U.S.C. 103(a) over Farmer (WO 02/39486) in view of Yung et al. (US 6909974 B2).

ARGUMENT

1. REJECTION OF CLAIMS 1-6, 8-14, 16-18, and 20 UNDER 35 USC 102(b)

With regard to the 35 U.S.C. §102(b) rejections of claims 1-6, 8-14, 16-18, and 20 as being anticipated by Farmer, Appellant asserts that Farmer fails to teach each and every feature of the claimed invention.

Claim 1 (and similarly claims 8 and 16) recites, *inter alia*, "a database for storing a list of available Web services, wherein each listed Web service includes a description of a task performed by the Web service and an input signature and an output signature of the Web service, wherein the Web service comprises a computer program accessible over the World Wide Web." Farmer does not teach these features.

The Office cites to Figure 3 and paragraphs 0018, 0022, 0051, 0057, 0058 and 0062 of Farmer in support of its allegations. Final Office Action 02-03-2009 p.2-3. More specifically, these citations do not teach "a database for storing a list of available Web services." Farmer states "The Services Broker allows

components to request and provide services to one another..." [0018] In reviewing the cited references, it appears the Office means to equate "Services Broker" of Farmer with Appellant's "database for storing a list of available Web services." A broker is an intermediary and is described as such by Farmer in stating the Services Broker requests and provides services. Farmer does not teach the Services Broker as storing any information but rather as a go-between for services. A database stores information and specifically Appellant's database stores a list of available Web services. Accordingly, Farmer does not teach "a database for storing a list of available Web services."

Further, claim 1 recites, *inter alia*, "a selecting system for forming the chain of Web services by selecting a Web service from the list of available Web services for each of a plurality of tasks in the workflow." Farmer does not teach each of these features.

The Office cites to Figure 11 and paragraphs 0040, 0053, 0060, 0061, 0062 and 0063 of Farmer in support of its allegations. Final Office Action 02-03-2009 p.3. More specifically, these citations do not teach "selecting a Web service from the list of available Web services for each of a plurality of tasks in the workflow." The citations to Farmer do not teach anything related to "tasks in the workflow." Rather the citations to Farmer appear to address "interface components" for various classes of databases. In particular, see [0061] which states "an interface can be defined for each of the fundamental classes" and [0058] "these fundamental classes tend to reflect stable and established models and concepts" with examples that discusses the entities of three genome related

databases. Examined in its entirety, Farmer does not teach “selecting a Web service from the list of available Web services for each of a plurality of tasks in the workflow.”

Further, claim 1 recites, *inter alia*, “wherein the selecting examines a set of available Web services configured to execute each task and identifies and selects at least one Web service having matching input and output signatures ensuring that each Web service selected to complete a task is compatible with adjacent Web services in the chain of Web services.” Farmer does not teach each of these features.

The Office cites to Figures 3 and 11 and paragraphs 0022, 0036, 0041, 0043, 0046, 0048, 0049, 0056-0058, 0061, 0070, 0071 and 0074-0079 of Farmer in support of its allegations. Final Office Action 02-03-2009 p.3. The citations to Farmer provided by the Office do not teach the matching of Web services based upon their respective input and output signatures. Rather the citations provided state the messages between invoked programs are wrapped with a simple Java class. [0071] Farmer states “This Java wrapper handles the broadcast and reception of integrated system events and transmits them in terms the program can understand.” [0071] The Office states “This is accomplished by the execution of a chain of Web services involving wrapping the messages passed within the system in a simple Java class for communication.” Final Office Action 04-02-2008 p.12. To the extent the Office equates the invoked programs of Farmer with the selected Web services of Appellant, Farmer does not teach the matching of input and output signatures. Thus, Farmer does not teach these

features.

Accordingly, for all of the above reasons, Farmer does not teach each and every feature of Appellant's claimed invention. Appellant respectfully requests withdrawal of the rejections.

2. REJECTION OF CLAIMS 7, 15, and 19 UNDER 35 USC 103(a)

With regard to the 35 U.S.C. §103(a) rejections of claims 7, 15, and 19 as being unpatentable over Farmer in view of Yung, Appellant asserts that Farmer and Yung fail to teach or suggest each and every feature of the claimed invention.

For the reasons given above with respect to the rejection of claims 1-6, 8-14, 16-18, and 20 over Farmer appellant assert that claims 7, 15, and 19 that depend there from are allowable for the same reasons in addition to their own unique features.

With respect to the dependent claims, Appellant herein incorporates the arguments presented above with respect to the independent claims from which the claims depend. Furthermore, Appellant submits that all dependant claims are allowable based on their own distinct features.

CONCLUSION

In summary, Appellant submits that claims 1-20 are allowable because the claimed invention is not anticipated by Farmer.

Respectfully submitted,

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Date: April 23, 2009

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CLAIMS APPENDIX

1. A system for dynamically implementing a chain of Web services from a client on the World Wide Web to execute a workflow for analyzing microarray data, comprising:

a database for storing a list of available Web services, wherein each listed Web service includes a description of a task performed by the Web service and an input signature and an output signature of the Web service, wherein the Web service comprises a computer program accessible over the World Wide Web; and

a selecting system for forming the chain of Web services by selecting a Web service from the list of available Web services for each of a plurality of tasks in the workflow, wherein the workflow comprises a series of linked tasks and a specified input and output format, and wherein the selecting examines a set of available Web services configured to execute each task and identifies and selects at least one Web service having matching input and output signatures ensuring that each Web service selected to complete a task is compatible with adjacent Web services in the chain of Web services; and

a signature matching system for identifying the set of available Web services configured to execute each task, wherein for each task the identifying comprises identifying all Web services in the list of available Web services having at least one of the matching input and output signatures for each task.

2. The system of claim 1, wherein the workflow comprises a microarray

analysis workflow.

3. The system of claim 1, further comprising a workflow generator for creating the workflow.
4. The system of claim 1, wherein the list of available Web services resides locally with the client.
5. The system of claim 1, further comprising a system for collecting and storing available Web services data.
6. The system of claim 1, further comprising a system for inputting sequence data into the workflow execution.
7. The system of claim 1, wherein the input signature comprises a FASTA XML format for a set of input sequences and the output signature comprises an XML file format for providing spatial microarray placement data.

8. A program product, stored on a recordable medium for executing a workflow for analyzing microarray data by dynamically implementing Web services from a client on the World Wide Web, comprising:

program code configured for storing a list of available Web services, wherein each listed Web service includes a description of a task performed by the Web service, and an input signature and an output signature of the Web service; and

program code configured for forming a chain of Web services by selecting a Web service from the list of available Web services for each of a plurality of tasks in the workflow, wherein the workflow comprises a series of linked tasks and a specified input and output format, and wherein the selecting examines a set of available Web services configured to execute each task and identifies and selects at least one Web service having matching input and output signatures ensuring that each Web service selected to complete a task is compatible with adjacent Web services in the chain of Web services; and

program code configured for identifying the set of available Web services configured to execute each task, wherein for each task the identifying comprises identifying all Web services in the list of available Web services having at least one of the matching input and output signatures for each task.

9. The program product of claim 8, wherein the workflow comprises a microarray analysis workflow.

10. The program product of claim 8, wherein the workflow comprises a bioinformatics workflow.
11. The program product of claim 8, further comprising program code configured for creating the workflow.
12. The program product of claim 8, wherein the storage resides locally with the client.
13. The program product of claim 12, further comprising program code configured for collecting and storing available Web services data in said storage.
14. The program product of claim 8, further comprising a system for inputting sequence data into the workflow execution.
15. The program product of claim 8, wherein the input signature comprises a FASTA XML format for a set of input sequences and the output signature comprises an XML file format for providing spatial microarray placement data.

16. A method for executing a bioinformatics workflow from a client on the World Wide Web, comprising:

providing a workflow having a plurality of linked tasks and a specified input and output format;

providing a list of known bioinformatics Web services, wherein each listed Web service includes a description of a task performed by the Web service, and an input signature and an output signature of the Web service, further wherein the Web service comprises a computer program accessible over the World Wide Web;

selecting a Web service from the list of known bioinformatics Web services for each task in the bioinformatics workflow to form a chain of Web services, wherein the selecting step examines a set of available Web services configured to execute each task and identifies and selects at least one Web service having matching input and output signatures ensuring that each Web service selected to complete a task is compatible with adjacent Web services in the chain of Web services; and

identifying the set of available Web services configured to execute each task, wherein for each task the identifying comprises identifying all Web services in the list of available Web services having at least one of the matching input and output signatures for each task; and

calling each selected Web service in the chain to execute the bioinformatics workflow.

17. The method of claim 16, wherein the bioinformatics workflow comprises a microarray analysis.
18. The method of claim 16, wherein the list of known bioinformatics Web services resides locally to the client.
19. The method of claim 16, wherein the input signature comprises a FASTA XML format for a set of input sequences and the output signature comprises an XML file format for providing spatial microarray placement data.
20. The method of claim 19, wherein the step of calling each selected Web service includes the step of providing a set bioinformatics data to a first Web service in the chain in the specified input format.

EVIDENCE APPENDIX

No evidence has been submitted.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.